Covanta Emissions Testing
DRAFT Desk Statement/Background/Q&As

Introduction:
As EPA pursues its mission to protect human health and the environment, addressing Per- and Polyfluoroalkyl Substances (PFAS) remains a major priority for the Agency. One significant focus of this effort is research to better understand how to destroy these chemicals which are persistent and difficult to eliminate during waste processing.

Desk Statement:
During the week of August 31, 2020, EPA will be conducting an emissions testing program at a municipal waste combustor (MWC) in Rahway, Union County, NJ. The MWC is operated by Covanta. The emissions testing is part of a larger overall effort by EPA to evaluate the effectiveness of incineration to treat or remove PFAS from contaminated waste or media. The MWC will operate with its normal municipal waste stream while EPA uses non-toxic indicator compounds to evaluate the effectiveness of combustion in breaking down chemical bonds found in PFAS compounds.

Background:
Problem: Addressing and managing PFAS in the environment is one of the most pressing environmental issues facing EPA. This issue is particularly challenging because PFAS chemicals have a very strong carbon-fluorine chemical bond that leads to persistence in the environment and makes their complete destruction extremely difficult. Given the ubiquitous nature of PFAS and increasing public concerns, EPA and its state/tribal/local and Federal partners are looking for greater certainty when making decisions about disposal and treatment of PFAS containing materials and PFAS contaminated media/waste. While incineration is an approach that has been used to treat PFAS contaminated media EPA is seeking to better understand the effectiveness of incineration to destroy/remove PFAS and the potential for by-products of incomplete combustion in air emissions and waste. EPA would like to provide additional information on PFAS incineration so that states and other permit authorities have confidence in their decisions.

Approach: The EPA's Office of Research and Development (ORD) established a PFAS Innovative Treatment Team (PITT) in April of 2020 to fast track development of new technologies and establish science-based performance data for existing technologies. With a six-month lifetime, the PITT is developing a toolkit of technologies that will provide decision makers with information on PFAS waste disposal and treatment options. In concert with long term research at ORD, the PITT is conducting research to evaluate the efficacy of incineration of PFAS containing materials (e.g., firefighting foam) and PFAS contaminated waste/media (e.g., contaminated soil). EPA is taking a holistic approach to its PFAS incineration research by conducting modeling simulations, laboratory testing, and field work. The information from all lines of research will be integrated to identify and characterize the operating conditions (e.g., temperature and time) to ensure the optimal destruction of PFAS. The field research includes emissions testing at incineration facilities including municipal waste combustors, such as Covanta in Union County. The field work at Covanta will measure potential PFAS emissions from the incineration of a typical municipal waste stream and will also involve measurements from the incineration of surrogate compounds, CF4 and C2F6. The surrogate compounds have among the strongest C-F bonds known to exist which will provide critical insights into the effect of incineration in destroying C-F bounds present in PFAS compounds which are less strong and will also provide insights for the potential for producing products of incomplete combustion (PIC).

Anticipated Benefits: The field research at the Covanta site is critical as it provides a real-world incineration test that will be used to evaluate/validate results from incineration experiments conducted in controlled laboratory settings. The results from this field work will inform future field tests and will also be used to develop technical guidance for EPA and its federal/state/local/tribal partners to increase certainty in decisions related to the treatment of PFAS contaminated media and waste via incineration.

Other EPA work on PFAS: This project is one small part of EPA's effort to understand PFAS and reduce their related public and environmental health risks for more information, please read the PFAS Action Plan and other materials on our website: https://www.epa.gov/pfas.

Q&As:

When will the emissions test occur?

- Week of August 31, 2020.

Where is the Covanta facility located and what type of facility is it?

- The Union County Resource Recovery Facility, operating as Covanta Union, LLC, is located on the banks of the Rahway River. It began commercial operation in June 1994 and serves the residents of Union County, New Jersey. The 22-acre facility processes approximately 1,500 tons of solid waste each day into enough electrical energy to power some 30,000 homes and businesses. Designed and built by Covanta, the facility is owned by the Union County Utilities Authority and operated by Covanta under a long-term lease agreement. (from Covanta website)

What mechanism is being used for this collaboration?

- EPA and Covanta have signed Cooperative Research and Development Agreement (CRADA) to execute this field test.

What is EPA's Role?

- Develop the Quality Assurance Project Plan (QAPP).
- Provide sampling materials to Covanta.
- Conduct both targeted and non-targeted analyses of samples.
- Conduct analysis of SUMMA canister samples.
- Conduct real-time monitoring on surrogate destruction and potential PICs at plant.
- Analyze data and write final report.

What is Covanta's Role in the CRADA?

- Provide information on the facility to allow for EPA to produce a Quality Assurance Project Plan (QAPP).
- Collect samples during the emission test.
- Ensure facility modifications, if any, to allow for surrogate gas injection.

Does EPA's work with this facilty mean that the facility normally incinerates PFAS compounds?

- No. PFAS materials are not specifically sent to this facility, rather the facility burns household municipal waste to produce energy. However, municipal solid waste does likely contain some PFAS from consumer products.

Will the facility burn PFAS for this experiment?~~Will EPA be introducing PFAS into the Covanta incinerator?~~

- No, EPA will be sampling a typical municipal waste stream that is being incinerated at the Covanta site.
- Two compounds that contain no PFAS but mimic the carbon-flourine bond of PFAS, _____, will be added to the process as indicators of the effectiveness of the incinerator process to destroy PFAS.

What are the health effects of these two compounds used as indicators?

- There are no anticipated human health effects from the use of these carbon-fluorine indicator compounds in this study. These compounds are estimated to be used for a total of only 5 hours and at a low concentration, nominally 10 parts per million. The carbon-fluorine compounds are both greenhouse gases commonly used in industrial applications, but the amounts used in this study are minimal and will be limited to 5 hours of operation – just enough to verify the accuracy of the emission measurements. (This response to be updated with information from scientific literature review)

The household municipal waste stream incineration batches are not uniform; some batches might have PFAS-containing products (products coated with PFAS) while other batches might not. How will the sampling provide defensible decisions on the incineration effectiveness of PFAS, without knowing the PFAS incineration input?

What is a typical municipal waste stream at the Covanta facility?

- The typical waste stream at the Covanta MWC consists of household refuse.

Does EPA expect to find PFAS from the incineration of the municipal waste?

- While PFAS-containing materials are expected in everyday household refuse, the temperature and time conditions are expected to break the PFAS apart. The extent to which this happens is the subject of this sampling effort.

Is EPA planning any other tests beyond sampling potential PFAS emissions from the typical municipal waste stream?

- Yes, EPA will be injecting limited amounts of two carbon-fluorine indicator compounds, carbon tetrafluoride (CF4) and hexafluoroethane (C2F6), into the Covanta incineration system to serve as experimental controls.

From a measurement data quality objective perspective, what is the dilution ratio of PFAS to the batch volume and can the final diluted PFAS concentration be measured to conclude a defensible decision on complete destruction?

Why is EPA adding two ~~using indicator~~ compounds during this test?

- The compounds are being used as indicators, and they will ~~are being~~ be used as an experimental control since the amount of PFAS in the waste fed into the combustor cannot be determined.
- These indicators are also easily monitored in real time, providing an indication of the facility's effectiveness.
- These compounds will provide insights into the fate of PFAS-containing municipal wastes

~~What are the effects of indicators?~~

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~~both greenhouse gases commonly used in industrial applications, but the amounts used in this study are minimal and will be limited to 5 hours of operation – just enough to verify the accuracy of the emission measurements. (This response to be updated with information from scientific literature review)~~ [I just moved this up]

Does EPA expect to observe any products of incomplete combustion (PICs) during the study?

- EPA expects hydrogen fluoride (HF) may be identified as a PIC but anticipates the controls at the MWC will remove HF from the emissions. EPA will be monitoring HF continuously during the study.

At what locations in the Covanta MCW system will EPA be sampling?

- EPA's sampling locations include both before and after the flue gas cleaning system.

Is the Covanta facility currently the subject of any enforcement actions or permit violations?

- ~~Input from EPA R2 and/or NJDEP~~EPA has not taken any enforcement actions in connection with the Covanta Rahway facility. The New Jersey Department of Environmental Protection (NJDEP) took an action in 2019 for excess emissions of CO on two dates; that case was settled with Covanta's agreement to pay a penalty of $13,200. In 2018 NJDEP took an action for excess emissions of CO on one date; that case was settled for a penalty of $1,800. (Other instances of excess CO emissions on a total of five dates in 2018 and 2019 were excused by NJDEP based on its approval of an Affirmative Defense submitted by Covanta.)

How will the results from this test be used?

- The results from this field work will inform future field tests and will also be used to develop technical guidance for EPA and its federal/state/local/tribal partners to increase certainty in decisions related to the treatment of PFAS contaminated media and waste via incineration.

If tests show that the two indicator compounds are successfully destroyed, will Covanta begin accepting PFAS materials at this or other facilities?

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We assume the answer is "no" – at least not in the sense of accepting quantities of PFAS waste such as AFFF. We recognize, of course, that small quantities of PFAS are likely to be included in various municipal waste items.

Are EPA and Covanta taking precautions relating to COVID 19?

- Yes, both EPA and Covanta have instituted measures to protect the health and safety of their employees during the emissions test including social distancing measures and the use of personal protective equipment (PPE).